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ABSTRACT

The purpose of the Minority Biomedical Support Program (MBS) is to increase the numbers of ethnic minority faculty and student investigators engaged in biomedical research. The grants that the MBS program awards, cover a wide scope of research costs including support for student research (mainly undergraduate). In this directory of MBS-supported research projects, entries are organized alphabetically by the name of the grantee institution. The name of the principal investigator or program director appears with the address of the institution. Adjoining columns show the names of the individual project investigator and the title of each research project. A geographical index is provided at the end of the directory. In it, grantee institutions are listed alphabetically by state, and within each state in alphabetical order according to the name of the institution. (Author/BB)

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minority biomedical support program

A Directory of the Research Projects

U. S. DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE
Public Health Service
National Institutes of Health

SE 024 111

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A researcher supported by the MBS Program prepares to inject laboratory rats with methadone in an effort to find compounds that block the drug's withdrawal effects.

minority biomedical support program

A Directory of the Research Projects

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Research Resources
Information Center
October 1977

INTRODUCTION

The purpose of the Minority Biomedical Support Program (MBS) is to increase the numbers of ethnic minority faculty and student investigators engaged in biomedical research. A particularly noteworthy aspect of the MBS Program is its encouragement of undergraduate participation in biomedical research. The MBS is one of two NIH programs which specifically includes undergraduates, who totalled 1008 of the almost 1800 minority researchers supported last year.

The program enables participants to engage in the entire scientific process, from research ideas, through design and experimentation, to the presentation of findings at scientific meetings, with possible publication of research results in a major scientific journal.

Many minority institutions require broad support to improve their biomedical capabilities. Needed are modern, advanced scientific equipment, increased laboratory space, alterations and renovation, funds for animals and animal care, salaries for student participants, money for travel to professional meetings, and salaries to release faculty from heavy teaching loads.

The grants that the MBS Program awards cover a wide scope of research costs including support for:

- faculty for "released time" spent on research away from the classroom in lieu of salaries earned from teaching.
- pilot studies and definitive research projects by faculty members.
- student research, mainly undergraduate, but also to both pre- and postdoctoral research participants.
- other students participating in MBS-supported research.
- faculty and students who conduct summer research.
- the purchase of resources, such as specialized equipment and animal facilities, to provide a research and
- teaching environment necessary to attract qualified and capable students.

DIRECTORY ORGANIZATION

The directory entries are organized alphabetically by the name of the grantee institution. The name of the principal investigator or program director appears with the address of the institution. Adjoining columns show the names of the individual project investigator and the title of each research project.

A geographical index is provided at the end of the directory. In it, grantee institutions are listed alphabetically by state, and within each state in alphabetical order according to the name of the institution.

Program Director	Principal Investigators Number of Student Participants	Research Projects
George W. Grayson, Ph.D. Professor and Head Biology Department Alabama A & M University Normal, Alabama 35762 (205) 859-7268	John Ruffin, Ph.D. (three student participants) J. Savage, Ph.D. (four student participants) William Gibson, Ph.D. (three student participants) Richard Evans, Ph.D. (one student participant)	Clinical significance of airborne pollen and fungi. Mode of action of natural pesticides in animal and plant systems. " "
James Oliviere, Ph.D. Professor of Biology Chairman, Division of Biological Sciences Alabama State University 915 South Jackson Street Montgomery, Alabama 36101 (205) 262-3581	James Oliviere, Ph.D. (four student participants) Chuma Igwegbe, Ph.D. (five student participants)	Nutritional studies of two species of the genus *Vorticella*. Nutrition, transmission, host range and effects of antibiotics on *Mycoplasma* associated with "stubborn disease" of citrus plants.

Program Director	Principal Investigators Number of Student Participants	Research Projects
Billy C. Black, Ph.D. Chairman, Division of Arts & Sciences Department of Chemistry Albany State College Albany, Georgia 31705 (912) 439-4030	Harold Bates, Ph.D. (four student participants)	Effect of prostaglandin E (1) on ploidy distribution in mouse liver cell nuclei.
	Edwin A. Green, Ph.D. (six student participants)	An ultrastructural, cytochemical, and physiological investigation of changes in major organs of mice induced by drugs.
	Jack Steele, Ph.D. (five student participants)	A study of the modes of chelation of tridentate amino acid to tetraamine cobalt (III) complexes with two sites available for ligation. As a possible model for the active sites of metal-enzymes-substrate reactions.
	Billy C. Black, Ph.D. (six student participants)	A study of the influence of growth temperature in *Penicillium javanicum* on the percent of fatty acids and fatty acid distribution in glycerides.

Program Director	Principal Investigators Number of Student Participants	Research Projects
Charles Pfeifer, Jr., Ph.D. Professor of Biology University of Albuquerque St. Joseph Place, N.W. Albuquerque, New Mexico 97140 (505) 831-1111 x225	Charles Pfeifer, Jr., Ph.D. (five student participants) Clare Sun, Ph.D. (four student participants) Curtis Pantle, Ph.D. (five student participants)	Effects of colchicine on reproduction in the albino mouse. Mutagenicity of environmental chemicals in *Sordaria brevicollis*. Cellular responses to oxygen lack in heart muscle cells of rats and nerve cells of chick embryos.
Henry Parker, Ph.D. Professor of Biology Alcorn State University Lorman, Mississippi 39096 (601) 877-3711 x246	M. P. Sharma, Ph.D. (five student participants) Joseph Russell, Ph.D. (five student participants)	Immunochemistry of cellulase. Freon toxicity.

Program Director	Principal Investigators Number of Student Participants	Research Projects
Joe Johnson, Jr., Ph.D. Professor of Chemistry Atlanta University Consortium 223 Chestnut Street, S.W. Atlanta, Georgia 30314 (404) 525-5668	Judith Lumb, Ph.D. (four student participants)	Phase I: a study of derepression in mouse lymphomas. Phase II: a computer simulation of leukemogenesis.
	Louise Miller, Ph.D. Judith Lumb, Ph.D. (two student participants)	Tumor suppression by *Toxoplasma gondii*.
Participating Institutions:		
Atlanta University 223 Chestnut Street, S.W. Atlanta, Georgia 30314 (404) 681-0251	Roosevelt Thedford, Ph.D. Judith Lumb, Ph.D. Louise Miller, Ph.D. R. Sheehy, Ph.D. (three student participants)	The synthesis and biological activity of alkylated (poly) ribonucleotides.
Clark College 240 Chestnut Street, S.W. Atlanta, Georgia 30314 (404) 681-3080	Roosevelt Thedford, Ph.D. Isabella Finkelstein, Ph.D. Joe Johnson, Ph.D. (three student participants)	Structure and function of the 5'- and 3'- terminii of eukaryotic messenger RNA.
Morehouse College 223 Chestnut St., S.W. Atlanta, Georgia 30314 (404) 681-2800	Thomas E. Norris, Ph.D. R. Sheehy, Ph.D. Judith Bender, Ph.D. (two student participants)	Refinement of the activation system and bacterial test system in detection of chemical mutagens.
Morris Brown College 643 Martin Luther King, Jr., Dr., S.W. Atlanta, Georgia 30314 (404) 525-7831	Joseph B. Myers, Ph.D. C. S. Fray, Ph.D. Nerimiah Emmett, Ph.D. (two student participants)	Control of blood pressure and renin release.
Spelman College 350 Spelman Lane, S.W. Atlanta, Georgia 30314 (404) 681-3643	James Turner, Ph.D. G. S. Owen, Ph.D. (one student participant)	A comprehensive study of hemoglobin S and SS erythrocytes.
	Malcolm Polk, Ph.D. Joseph B. Myers, Ph.D. Joe Johnson, Ph.D. (three student participants)	Development of a fluorescence assay for angiotensin I and II.

(Continued on next page)

Program Director	Principal Investigators Number of Student Participants	Research Projects
Atlanta University Corsortium (Continued)	Winfred Harris, Ph.D. Isabella Finkelstein, Ph.D. Charles Hubert, Ph.D. Dorothy Zinsmeister, Ph.D. (four student participants)	Studies on the morphological and biochemical differentiation of mammalian heart cells.
	Ronald J. Sheehy, Ph.D. and Errol Archibold, Ph.D. (four student participants)	An investigation into the molecular intricacies of bacterial plasmid replication and its control in *Staphylococcus aureus* and *Escherichia coli*.
	Clarence Clark, Ph.D. and Ronald J. Sheehy, Ph.D. (three student participants)	Molecular studies on the nature of resistance transfer factor replication and regulation in *Salmonella typhimurium*.
	G. Scott Owen, Ph.D. and Joe Johnson, Ph.D. (four student participants)	Studies on avian fructose 1.6-bisphosphatase.
	John H. Hall, Jr., Ph.D. (four student participants)	Atmospheric chemistry: the mechanisms and kinetics of the reactions of ozone and stratospheric pollutants.
	Thomas W. Cole, Ph.D., James L. Reed, Ph.D. and Joe Johnson, Ph.D. (two student participants)	Studies on coenzyme B_{12} dependent enzyme.
	William B. LeFlore, Ph.D. and Barnett F. Smith, Ph.D. (two student participants)	Histochemical, immunohistochemical, ultrastructural and scanning electron microscopic studies on *Cysticercus fasciolaris*.

(Continued on next page)

Program Director	Principal Investigators Number of Student Participants	Research Projects
Atlanta University Consortium (Continued)	Cyril Moore, Ph.D. (two student participants)	Biochemical and biophysical studies with mottled mutant mice as a model for Menkes' kinky hair disease.
	Henrie M. Turner, Ph.D. (two student participants)	Comprehensive characterization of the myxamoebal stage of *Physarum polycephalum*.
	James C. Story, Ph.D. (two student participants)	Control of anterior pituitary secretion: studies of the distribution and disappearance of extrapituitary LH (and FSH).
	Kiah Edwards, Ph.D. (two student participants)	The characterization and regulation of blastokinin genes during embryogenesis in rabbits.
	Suzanne J. Carr, Ph.D. (two student participants)	Social development in pre-school black children.

Program Director	Principal Investigators Number of Student Participants	Research Projects
Mary Finlay, Ph.D. Professor of Biology Benedict College Harden and Blanding Street Columbia, South Carolina 29204 (803) 254-4220	Juania Scott, M.S. (three student participants)	Effects of some water pollutants on embryonic development, regeneration, and transplantation in *Rana pipiens*.
	Mary Finlay, Ph.D. (four student participants)	Effects of metals on reproduction and fetal health in *Peromyscus*.
	James Kinard, Ph.D. (four student participants)	Studies to identify and determine the trace metals that are accessible for human consumption and exposure in various sampling domains (air, water, soil, vegetation) within a single metropolitan area.
	Frank Cabrera, Ph.D. Willie McClerklin, M.S. Raghbir Singh, Ph.D. (six student participants)	The chemical analysis and biological effects of exhaust gas pollutants from selected cities in South Carolina.

Program Director	Principal Investigators Number of Student Participants	Research Projects
Richard F. Copeland, Ph.D. Associate Professor Division of Science & Mathematics Bethune-Cookman College Box 346 Daytona Beach, Florida 32015 (904) 255-1401 x311	Richard F. Copeland, Ph.D. (four student participants) Glen R. Bethune, Ph.D. (four student participants) Premsukh Poonai, Ph.D. (four student participants) Wu-Nan Kuo, Ph.D. (four student participants)	Mixed valence square planar iridium complexes: a model system for electron transport in biochemical reactions of organic macromolecules. Linear energy transfer (LET) measurements of fission fragments in absorbent material closely resembling living tissue. Breeding of *Oryza sativa* for increased protein content. Stimulatory modulator of cyclic GMP-dependent protein kinase modulator.
Edison R. Fowlks, Ph.D. Chairman and Professor Department of Biology Bishop College 3837 Simpson-Stuart Road Dallas, Texas 75241 (214) 376-4311 x286	Edison R. Fowlks, Ph.D. (eight student participants) Jesse W. Jones, Ph.D. (four student participants)	Molecular structure and function of multiple component viral ribonucleic acid. Synthesis of some modified purine nucleosides/nucleotides.

Program Director	Principal Investigators Number of Student Participants	Research Projects
Lloyd Ferguson, Ph.D. Professor of Chemistry California State University 5151 State University Los Angeles, California 90032 (213) 224-3613	Lloyd Ferguson, Ph.D. (two student participants)	Biomolecular studies on the sense of taste.
	Kenneth Anderson, Ph.D. (two student participants)	Immunomycology of pathogenic fungi.
	Anthony Andreoli, Ph.D. (three student participants)	Studies on the biosynthesis of nicotinamide adenine dinucleotide in bacteria.
	Anthony Andreoli, Ph.D. (three student participants)	Biochemial studies of sporulation in *Bacillus* species.
	Joseph Seto, Ph.D. (one student participant)	Surface antigens of paramyxoviruses
	Douglas Currell, Ph.D. (two student participants)	Kinetic study of the mechanism of dissociation of hemoglobin and nuclear magnetic resonance studies of the binding of small molecules to hemoglobin and heme proteins.
	Anthony Fratiello, Ph.D. (three student participants)	Mechanism of anticancer agent complex formation.
	Roger Bower, Ph.D. (three student participants)	The lung carrageenan granuloma as a model of fibrotic pulmonary disease.
	David Frisch, Ph.D. (three student participants)	Uptake of trace elements by isolated epithelial cells from rat intestine.
	Harold Goldwhite, Ph.D. (three student participants)	Interactions of biopolymers with phosphorus compounds.

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Program Director	Principal Investigators Number of Student Participants	Research Projects
California State University (Continued)	Thomas Onak, Ph.D. (three student participants)	Biologically active organoborane derivatives.
	Donald Paulson, Ph.D. (two student participants)	Photochemistry of epoxides: a study of the gas phase photochemistry of simple epoxides found in smog; photochemical cycles model system related to squalene oxide.
	Howard Rosen, Ph.D. (four student particiants)	Nature of ultraviolet sensistivity in *Chlamydomonas*.
	Joseph Sacher, Ph.D. (two student participants)	Regulation of synthesis of enzymes induced by wounding storage tissue.
	Duley Thomas, Ph.D. (three student participants)	Acid hydrolases in connective tissue catabolism, and acid hydrolase activity during growth and regression of carrageenan in neoplasms.
	Kenneth A. Devor, Ph.D. (two student participants)	Protein metabolism in the inner membrane of *E. coli*.
	Joseph T. Seto, Ph.D. (three student participants)	Surface antigens of paramyxoviruses.

Program Director	Principal Investigators Number of Student Participants	Research Projects
Willie Brown, Ph.D. Associate Professor Department of Biology Third College University of California, San Diego P.O. Box 109 La Jolla, California 92037 (714) 452-3463	Edward Alexander, Ph.D. (three student participants)	Photochemistry of 1.3-; 1,4-; and 1,2-diazines.
	Willie Brown, Ph.D. (three student participants)	Analysis of autolysins during sporulation and germination in *Bacillus subtilis*.
	Ramon Pinon, Ph.D. (two student participants)	Molecular studies of meiosis in yeast.
	George Fortes, Ph.D. (three student participants)	Red blood cell membrane properties in nonelectrolyte solutions.
	Trevor McMorris, Ph.D. (four student participants)	Synthesis of indanones related to the antitumor compound illudin-S; Isolation and metabolism of sterols in the fungi *Achlya* and *Pythium*.
	Elvin Harper, Ph.D. (four student participants)	The control of cartilage collagen degradation in diseased and normal states.
	Percy Russell, Ph.D. (two student participants)	Isoenzymes of the adenylate kinases (a) In human neoplasms and tumors (b) In serum during shock (c) In fetal and adult heart tissues (d) In the cerebrum and cerebellum
	Juan Yguerabide, Ph.D. (one student participant)	Conformation dynamics of excitable membranes.
	Lemuel Bowie, Ph.D. (two student participants)	Hemoglobin molecules.
	William Thomas, Ph.D. (one student participant)	Effects of environment on photosynthetic uptake of 14C in various phytoplankton.

Program Director	Principal Investigators Number of Student Participants	Research Projects
Victor Rocha, Ph.D. Assistant Professor of Biology Seventh College University of California, Santa Cruz Santa Cruz, California 95064 (408) 429-2835/2180	Victor Rocha, Ph.D. (two student participants)	Immunochemical and enzymatic studies on the tryptophan biosynthetic enzymes in the Enterobacteriaceae.
	Charles Daniel, Ph.D. (two student participants)	Developmental biology of mouse mammary epithelium.
	Charles Oritz, Ph.D. (two student participants)	Physiological and neurochemical mechanisms of synaptic transmission.
	Clifton Poodry, Ph.D. (two student participants)	Genetic control of development using *Drosophila*.
	Henry Hilgard, Ph.D. (one student participant)	Immunology of tissue transplantation in mice.
	James (Paulo) Dice, Ph.D. (two student participants)	Protein degradation in diabetes and starvation.
	Frank Talamantes, Ph.D. (two student participants)	Physiology and biochemistry in placental prolactins.

Program Director	Principal Investigators Number of Student Participants	Research Projects
Arnaldo Carrasquillo, Ph.D. Professor of Chemistry Catholic University of Puerto Rico Las Americas Avenue Postal Station #6 Ponce, Puerto Rico 00731 (809) 844-4150 x209	Jose Correa, Ph.D. (six student participants) Ernesto R. Pereira, Ph.D. (nine student participants)	Studies on murine chondrosarcoma using Balb-C mice. *Aedes aegypti* mosquito control using plant extracts.
Melvin A. Johnson, Jr., Ph.D. Chairman, Department of Biology Central State University Wilberforce, Ohio 45384 (513) 376-7240	L. Shelbert Smith, Ph.D. (four student participants)	Synthesis and study of prostaglandins and their analogues.

Program Director	Principal Investigators Number of Student Participants	Research Projects
Lawrence Alfred, Ph.D. Faculty Research Associate Pathology Department Charles R. Drew Postgraduate Medical School 1621 East 120th Street Los Angeles, California 90059 (213) 603-3158	Randolph Edmonds, M.D. (two student participants)	Studies on sickle cell disease.
	Lawrence Robinson, M.D. (two student participants)	Biologic activity of an in vivo chemotactic factor.
	John Morris, Ph.D. (three student participants)	Ventricular dynamics in the fetal lamb.
	Alan Percy, Ph.D. (two student participants)	Lipid metabolism of the developing nervous system.
	David Ulmer, Ph.D. (one student participant)	Role of metals in human disease.
	Charles Francis, Ph.D. (two student participants)	Pathophysiologic and pharmacotherapeutic considerations in the assessment of the hemodynamics of essential hypertension.
	Albert Niden, Ph.D. (two student participants)	Pulmonary fibrosis and ultrastructural biochemical physiologic study.
	Frederick Mishkin, Ph.D. (one student participant)	Radionuclide cineangiographic assessment of left ventricular function.
	Michael Miller, Ph.D. (three student participants)	Studies of maturation of functional and biochemical activities of neonatal leukocytes.
	Lawrence Alfred, Ph.D. (five student participants)	Responses of cultured human lymphocytes and foreskin cells to carcinogenic polycyclic hydrocarbons.

Program Director	Principal Investigators Number of Student Participants	Research Projects
Augusta A. Mylorie, Ph.D. Chicago State University 95th Street at King Drive Chicago, Illinois 60628 (312) 995-2180	Reid S. James, Ph.D. (five student participants)	Stress survival as related to sex and corticosteroid increase.
	Frank V. Morzlock, Ph.D. (two student participants)	Enzymatic changes in regenerating forelimb of adult newt, *Triturus viridescens*, following denervation at various stages of development.
	Augusta A. Mylorie, Ph.D. (ten student participants)	Interrelationship of dietary factors; lead retention and lead toxicity.
	Warren V. Sherman, Ph.D. (two student participants)	Formation of carcinogenic substances in skin subject to UV.

Program Director	Principal Investigators Number of Student Participants	Research Projects
Joyce M. Verrett, Ph.D. Professor of Biology Dillard University 2601 Gentilly Boulevard New Orleans, Louisiana 70122 (504) 944-8751 x262	William Sutton, Ph.D. (two student participants) Joyce Verrett, Ph.D. (two student participants) Wilbur Moore, Ph.D. (two student participants) Marva Smith, Ph.D. (one student participant)	Chemical analysis of protozoa in various stages of the life cycle. Role of the frontal ganglion in water balance during vitellogenesis in the female cockroach, *Periplaneta americana*. Role of enzymes in sickle cell anemia. Sickle cell screening and the study of enzymes, isoenzymes, plasma proteins and other biochemical entities in the blood plasma of persons possessing variant hemoglobins (AC, AS, SS, SC).
Sekender A. Khan, Ph.D. Professor of Biology Chairman Biology Department Elizabeth City State University Elizabeth City, North Carolina 27909 (919) 335-0551	Sekender Khan, Ph.D. (four student participants) Herman Cooke, Ph.D. (three student participants) Curtin Turnage, Ph.D. (four student participants)	Effect of an active chemical in *Vitex negundo* on various biological systems. Ecology and classifications of certain species of chironomids as may be found in northeastern North Carolina. Peritrich morphology cytochemistry on habitat *Vorticella* spp. (General); *V. microstoma, V. nebulifera, V. campanula, V. convulleria* (Specific).

Program Director	Principal Investigators Number of Student Participants	Research Projects
Julius Mack, Ph.D. Dean School of Natural, Applied, and Health Sciences Federal City College 425 Second Street, N.W. Washington, D.C. 20001 (202) 727-2370	Medhi Hussain, Ph.D. (one student participant)	Protein binding studies of some tobacco smoke carcinogens.
	Norman Kondo, Ph.D. (two student participants)	Conformational studies on constituents of nucleic acids.
	George Eng, Ph.D. (two student participants)	Effects of heavy metals on activities of digestive enzymes.
	David Blackman, Ph.D. (three student participants)	Structure and function of yeast invertase.
	Sardul Pannu, Ph.D. (one student participant)	Electroanalytical determination of some selected metals.
	Carolyn Cousin, Ph.D. (eight student participants)	Effects of benzopyrene on the developing mouse embryo.
	Harriet Phelps, Ph.D. (two student participants)	Study of the isozyme and allozyme adaptations of an estuarine clam population *Mulina lateralis* to a nuclear power plant discharge.

Program Director	Principal Investigators Number of Student Participants	Research Projects
George Hull, Ph.D. Professor of Biology Fisk University Nashville, Tennessee 37203 (615) 329-8605	G. Hull, Ph.D. (three student participants)	Effect of temperature on aging in the house cricket.
	M. E. McKelvey, Ph.D. (three student participants)	Developmental interrelationships of the liver and mesonephroi of chick embryos: aminoguanidine sulfate studies.
	I. W. Elliott, Ph.D. (seven student participants)	Synthesis of N-heteroaromatic compounds of potential medicinal value.
	H. P. Penner, Ph.D. (one student participant)	Synthesis of some thiazolidines with a carboxyl function in the two position.
	E. Silberman, Ph.D. (two student participants)	Raman spectroscopic analysis of catecholamines and prostaglandins.

Program Director	Principal Investigators Number of Student Participants	Research Projects
Lambros Tterlikkis, Ph.D. Associate Professor of Pharmaceutics School of Pharmacy Florida A & M University Tallahassee, Florida 32307 (904) 599-3910	Abraham P. Ollapally, Ph.D. (two student participants)	Nucleoside analogs with possible antitumor activity. The principal objective is the synthesis of various 2'- and 4'- ketodeoxyhexosyl substituted uracils. All the 2'- and 4'- keto-nucleosides of L-fucose and L-rhamnose with purines have been found to possess significant growth inhibitory activity on KB and Leukemia L 1210 cells. It is hoped that the keto-nucleoside of the pyrimidine bases also will behave as anticancer agents.
	A. Subbayya Shetty, Ph.D. (three student participants)	Role of tryptophan metabolites and enzymes of tryptophan metabolism in carcinogenesis.
	Karam F. A. Soliman, Ph.D. C. A. Walker, Ph.D. H. J. Lee, Ph.D. L. P. Tterlikkis, Ph.D. T. J. Fitzgerald, Ph.D. (four student participants)	The role and mechanism of action of adrenal glucocorticoids participation on pituitary and hypothalamus in the female reproductive phenomenon. The two way interaction time between the adrenal and the ovary is investigated in an animal model using physiological and pharmacological manipulation of the ovulation process.
	Ralph W. Trottier, Jr., Ph.D. (two student participants)	Pharmacoimmunology: immunosuppression of immediate and delayed hypersensitivity reactions by derivatives of colchicine and prednisone.

(Continued on next page)

Program Director	Principal Investigators Number of Student Participants	Research Projects
Florida A & M University (Continued)	Peter T. Cottrell, Ph.D. (two student participants)	Synthesis of nucleoside analogs via electrophilic substitution of anion radicals; to develop separation, identification, and quantification methods for anticancer drug compounds used in this MBS project.
	Surrendar S. Lamba, Ph.D. (no student participants)	Biotransformation of nucleoside antibiotics and their effects on cells in culture. Objectives: 1. to study effects of nucleoside antibiotics on cells in culture. 2. to modify the structure of nucleoside antibiotics by microbial means.
	Lambros P. Tterlikkis, Ph.D. Paul Grenier (four student participants)	1. Pharmacokinetics of cancer chemotherapeutic agents (6-MP, 5-FUDR, etc) and 2. qualitative and quantitative analysis of anticancer drugs from biological fluids by (gas chromatographic/mass spectrometric computer).
	James L. Day, Ph.D. Lambros P. Tterlikkis, Ph.D. (three student participants)	1. Plasma protein binding of 6-mercaptopurine and 2. quantitative analysis of anticancer drugs from biological fluids (6-MP, 5-FUDR, etc.) by HPLC.
	Lynette P. Padmore, Ph.D. (two student participants)	Mutagenic effects of nucleosides.

Program Director	Principal Investigators Number of Student Participants	Research Projects
Dan Black, Ph.D. Associate Professor of Biology Fort Valley State College Box 457 Fort Valley, Georgia 31030 (912) 825-6241	Ernest W. Benson, Ph.D. (4 student participants) Clifford C. Smith, Ph.D. (4 students)	Introduction of urease regulatory gene by carcinogenic agents. Preparation of silicones with potential biomedical applications.
Franklin D. Hill, Ph.D. Professor of Chemistry Grambling State University Grambling, Louisiana 71245 (318) 247-8367	Franklin Hill, Ph.D. (sixteen student participants) Hossam Negm, Ph.D. (ten student participants) Robert Bailey, Ph.D. (nine student participants)	Pesticide levels of dairy and poultry products in north Louisiana. Effects of gamma radiation on the morphology, life cycle, and physiology of the American cockroach, *Periplaneta americana*. Avian leukosis; it's causes and histological changes in the nerve and muscle tissues.

Program Director	Principal Investigators Number of Student Participants	Research Projects
Don C. Ahshapanek, Ph.D. Instructor in Biology Haskell Indian Junior College Lawrence, Kansas 66044 (913) 841-2000 x237	Don Ahshapanek, Ph.D. (three student participants) Rodney Barkhurst, Ph.D. Dwight Thomas, Ph.D. (six student participants)	Interactions of microorganisms, grasses and forbs in the utilization of phosphates. Isolation and characterization of chemical principals from plants utilized by native Americans.
Satya P. Sodd, Ph.D. Professor of Chemistry University of Hawaii at Hilo P.O. Box 1357 Hilo, Hawaii 96720 (808) 961-9317 (Continued on next page)	E. Howard Mercer, Ph.D. (two student participants) Daniel P. Cheney, Ph.D. (four student participants) John G. Chan, Ph.D. (two student participants) Kaoru Noda, Ph.D. (two student particiants) Kaoru Noda, Ph.D. (one student participant)	Cellular and biochemical studies on coelenterates. Aspects of normal and neoplastic growth in corals. Shell disease in Hawaiian crustaceans. Protein analyses of snail hemolymph and foot muscle extract. Fine structure of the musculature of the cercaria of the fluke, *Stellantchasmus falcatus*.

Program Director	Principal Investigators Number of Student Participants	Research Projects
University of Hawaii at Hilo (Continued)	Kaoru Noda, Ph.D. (one student participant)	Fine structure of the cercaria of the fluke, *Centrocestus formosanus*.
	Don E. Hemmes, Ph.D. (five student participants)	Control of hyphal tip initiation in the fungus *Phytophthora*.
	William H. Hildemann, Ph.D. (three student participants)	Transplantation immuogenetics of marine coelenterates and fishes.
	Robert A. Fox, Ph.D. (two student participants)	Effects of alternating magneting fields on fish and tumors in mice.

Program Director	Principal Investigators Number of Student Participants	Research Projects
Frederick C. Greenwood, Ph.D. Director, Pacific Biomedical Research Center University of Hawaii, Manoa Sensory Sciences Building 1993 East-West Road Honolulu, Hawaii 96822 (808) 948-7401	Robert M. Nakamura, Ph.D. (one student participant)	Various diseases of animals. Salmonellosis fibromata in butterfly fish.
	Robert A. Kinsie, III, Ph.D. (two student participants)	Infection and epidemiology of an algal invertebrate symbiosis. The symbiotic relationship is between the reef building corals and their dinoflagellate partners.
	Yoshitsugi Hokama, Ph.D. (one student participant)	Peroxisomal enzyme levels in leukocytes and tissues of animals.
	Bruce E. Morton, Ph.D. (one student participant)	Biochemistry, various titles, projects in reproduction, cardiovascular and nerve function. Current student works on measuring sperm progression rates.
	Spencer Malecha, Ph.D. (one student participant)	Genetic polymorphisms in Hawaii tree snails in the genus *Achatinella*.
	Paul J. Scheuer, Ph.D. (one student participant)	Bioactive substances from natural products: isolation and structural determination of constitutents of gold coral (organo bromine compounds).
	Richard E. Moore, Ph.D. (one student participant)	Characterization of the constituents of toxic blue-green algae belonging to the genus *Lyngbya*.

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Program Director	Principal Investigators Number of Student Participants	Research Projects
University of Hawaii, Manoa (Continued)	Winifred R. Kubo, Ph.D. (two student participants)	Nursing intervention, problems of tube feeding - to improve the comfort of tube feeding.
	Ernst S. Reese, Ph.D. (one student participant)	The effects of crowding and the development of aggressive behavior in lower organisms (hermit crabs).
	Ernst S. Reese, Ph.D. (one student participant)	The possible role of behavior in functional hermaphroditism.
	Jane B. Rogers, Ph.D. (two student participants)	Capacitation of mammalian spermatozoa.
	Howard L. Gillary, Ph.D. (two student participants)	Visual mechanism in the mature and regenerating eye of *Strombus*, a marine gastropod.
	Howard F. Mower, Ph.D. (one student participant)	The role of fecal bacterial β glucuronidases in colon cancer and a study on the mutagens in Hawaiian edible seaweeds.
	David H. Crowell, Ph.D. (one student participant)	Auditory responsibility in low birthweight and term infants.

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Program Director	Principal Investigators Number of Student Participants	Research Projects
University of Hawaii, Manoa (Continued)	Gillian D. Bryant-Greenwood, Ph.D. (two student participants)	The uterine relaxing activities of ovarian relaxin and testicular-prostatic extracts.
	Barbara Z. Siegel, Ph.D. (two student participants)	Saline adaptations in common land plants.
	Wayne A. Chamley, Ph.D. (one student participant)	A study of peptide fractions which are generated during purification of porcine relaxin for specific uterine relaxing factor activity.
	Ronald W. Gillette, Ph.D. (one student participant)	Polyribonucleotides: effect upon the homing properties of lymphoid cells.

Program Director	Principal Investigators Number of Student Participants	Research Projects
Tommy L. Broadwater, Ph.D. Graduate School of Arts and Science Associate Dean for Research Howard University 415 College Street, N.W. Washington, D.C. 20059 (202) 636-6800	William R. Eckberg, Ph.D. (one student participant)	Cell surface in abnormal development.
	Leslie Hicks, Ph.D. (four student participants)	The basal ganglia and behavior.
	Carlyle B. Storm, Ph.D. (three student participants)	Mechanism of action of phenylalanine hydroxylase.
	Dorothy G. Walker, Ph.D. (two student participants)	Determination of the surface glycoproteins of transformed cells.
	Clyde B. Mathura, Ph.D. (five student participants)	Experimental manipulation of multiple neurotransmitters in developing rat brain; neurochemical and behavioral considerations.
	Narendar N. Soni, Ph.D. (two student participants)	The effect on the coronoid process of the removal of temporalis muscle in rabbit: quantitative fluorescence and microradiographic study.
	Narendar N. Soni, Ph.D. (two student participants)	Quantitative study of bone activity in alveolar bone of rabbits.
	Winston A. Anderson, Ph.D. Reginald Chisholm, Ph.D. (four student participants)	Endogenous peroxidase: a marker protein in estrogen dependent tumors.

Program Director	Principal Investigators Number of Student Participants	Research Projects
Evelyn Garrity, Ph.D. Professor of Chemistry Jackson State University Jackson, Mississippi 39217 (601) 968-2171	Stephen Bollinger, Ph.D. (four student participants)	Morphine addiction: instrumental behavior and the hypothalamus.
	Evelyn Garrity, Ph.D. (four student participants)	Kinetic studies of redox reactions of polynuclear complexes containing sulfur atom ligand.
	Fred Nelson, Ph.D. (three student participants)	Chemosterilization of *Culex pipiens quinquefasciatus* and *C. tarsalis*.
	Baldev Raj, Ph.D. (two student participants)	Bisulphites on S phase of mitosis in *Eukaryotes*.
	James Perkins, Ph.D. (three student participants)	Spectroscopic studies of some halogenated cyclopropene compounds.
	Robert W. Mack, Ph.D. (three student participants)	Histones and acidic proteins from avian erythrocytes.
	Richard H. Sullivan, Ph.D. (four student participants)	NMR studies of urea type compounds and their Lewis acid adducts.
	Joseph A. Cameron, Ph.D. (four student participants)	Influence of age, physiological state and purity on lipogenesis during hormone induced differentiation of mouse mammary gland in vitro.

Program Director	Principal Investigators Number of Student Participants	Research Projects
Ruth M. Snyder, Ph.D. Chairman, Chemistry Department Johnson C. Smith University 100 Beatties Ford Road Charlotte, North Carolina 28216 (704) 372-2370 x288	Ruth Snyder, Ph.D. (five student participants) B. K. Chopra, Ph.D. (five student participants)	Synthesis of antifungal agents. Therapy of *Microsporum* infections.
Gertrude C. Ridel Chairman, Department of Biology Kentucky State University Frankfort, Kentucky 40601 (502) 564-6066	Tejindar S. Kochhar, Ph.D. (four student participants) Gertrude Ridel, Ph.D. (four student participants)	In vitro transformation of normal cells to tumor cells by the action of carcinogenic compounds found in tobacco smoke. The biological effects of environmental insults in vitro and in vivo on cells and tissues using amino acid incorporation and protein synthesis as an index to determine biological effects.

Program Director	Principal Investigators Number of Student Participants	Research Projects
Jesse James, Ph.D. Professor of Chemistry Knoxville College 901 College Street, N.W. Knoxville, Tennessee 37921 (615) 546-0751 x271	Jesse James, Ph.D. (eight student participants) Mary Brown, Ph.D. (four student participants)	Characterization and standardization of selected materials and methods of importance in clinical science. Effect of teratogens on morphogenesis of microbial systems.
William T. M. Johnson, Ph.D. Professor of Chemistry Lincoln University Lincoln University, Pennsylvania 19352 (215) 932-8300 x268	William T. M. Johnson, Ph.D. (six student participants) L. D. Smucker, Ph.D. (four student participants) William G. Bush, Ph.D. (two student participants)	Blood vessels: determination of the role of the chemical composition and structure of the blood vessel intima in atherosclerosis; attempt to develop a sweat test for breast cancer. Biosynthesis of terrein in *Aspergillus terreus*. Effect of light on retinal degeneration. Effects of short term exposure to moderate intensity (80 ftc - 250 ftc) fluorescent light on retinas of albino and pigmented rats with elevated body temperatures.

Program Director	Principal Investigators Number of Student Participants	Research Projects
Joseph Wutoh, Ph.D. Associate Professor of Biology University of Maryland Eastern Shore Princess Anne, Maryland 21853 (301) 651-2200 x409 Also: Director of Marine Products Laboratory University of Maryland Crisfield, Maryland 21817 (301) 968-1655	Joseph Wutoh, Ph.D. Jack Pinion, Ph.D. (ten student participants) Thomas Hopkins, Ph.D. Joseph Wutoh, Ph.D. (ten student participants)	Isolation and purification of toxins from various marine algae and stingray. The pharmacological and physiological investigations of toxins of various species of marine algae in the Chesapeake Bay and adjoining Atlantic Ocean areas.
James G. Townsel, Ph.D. Associate Professor of Physiology School of Graduate Studies Meharry Medical College 1005 Eighteenth Avenue, North Nashville, Tennessee 37208 (615) 327-6288	Joel Blatt, Ph.D. (one student participant) Julius Jackson, Ph.D. (no student participants) Abdallah Isa, Ph.D. (one student participant) E. L Risby, Ph.D. (one student participant) J. G. Townsel, Ph.D. (one student participant) Wesley McNair, Ph.D. (between fifteen and twenty student participants)	Convergent mechanisms that control branched-chain amino acid biosynthesis. Common points regarding enzyme biosynthesis. Tumor immunity: nature of suppressor cells and factors. Serum changes in rabbits experimentally infected with *Trypanosoma gambiense*. Neurotransmitter studies in *Limulus polyphemus*. Research in biomedical science: summer institute.

Program Director	Principal Investigators Number of Student Participants	Research Projects
Kothapa Chetty, Ph.D. Chairperson Division of Science & Technology Mississippi Industrial College Holly Springs, Mississippi 38635 (601) 252-3411	Kothapa Chetty, Ph.D. William Henley, M.S. (six student participants)	Cobalt-iron interaction in animals, i.e., rats.
Harold Zenick, Ph.D. Department of Psychology Institute of Research New Mexico Highlands University Las Vegas, New Mexico 87701 (505) 425-7511 x262	Harold Zenick, Ph.D. Robert L. S. Amai, Ph.D. John Spencer, Ph.D. (eight student participants) Joseph Flippo, Ph.D. (five student participants) Robert L. S. Amai, Ph.D. George Sprenger, Ph.D Harold Zenick, Ph.D. (eight student participants)	An interdisciplinary-developmental approach to the study and treatment of environmental toxicity. Etiology and treatment of aggression in boys. Biochemical and behavioral studies of some CNS depressants.

Program Director	Principal Investigators Number of Student Participants	Research Projects
Glenn Kuehn, Ph.D. Associate Professor of Chemistry New Mexico State University Box 3C Las Cruces, New Mexico 88003 (505) 646-1015	Glenn Kuehn, Ph.D. (two student participants)	Cell development studies in *Physarum polycephalum*.
	Dennis Darnall, Ph.D. (one student participant)	Rare earth metal ions as probes of calcium ion binding sites in enzymes.
	James Hagman, Ph.D. (two student participants)	Nature and function of proteases in the sporulation of *Bacillus subtilis* and the characterization of the brown pigments produced during sporulation.
	Vincente Villa, Ph.D. (four student participants)	Effect of hexoses on the respiration and morphology of *Mucor rouxii* during spore germination and the conversion of yeast cells to filaments.
	Owen Weeks, Ph.D. (two student participants)	Products of secondary bacterial metabolism.
	James Botsford, Ph.D. (one student participant)	Cyclic AMP in *Agrobacterium tumefaciens*.
	James Botsford, Ph.D. (two student participants)	Metabolism of cyclic AMP in *Micrococcus lysodeikticus*.
	Marvin Bernstein, Ph.D. (one student participant)	Role of the avian respiratory system in thermoregulation.
	Marvin Bernstein, Ph.D. (two student participants)	Respiratory, cardiac, and thermo-regulatory responses to high altitude in resting birds.

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Program Director	Principal Investigators Number of Student Participants	Research Projects
New Mexico State University (Continued)	Marvin Bernstein, Ph.D. (two student participants)	Development of peripheral circulation and respiration in hatching quail.
	Joseph LaPointe, Ph.D. (one student participant)	Physiology of neurohypophysial hormone action.
	Cecilio R. Barrera, Ph.D. (three student participants)	Function, structures, and regulation of yeast pyruvate dehydrogenase complex.
	E. Rene Casillas, Ph.D. (two student participants)	Carnitine and cyclic AMP in maturing mammalian spermatozoa.
	Jose M. Sosa, Ph.D. (one student participant)	Separation of important biological optical isomers.

Program Director	Principal Investigators Number of Student Participants	Research Projects
Sei Tokuda, Ph.D. Professor, Department of Microbiology School of Medicine University of New Mexico Albuquerque, New Mexico 87131 (505) 277-5223	Robert Kelly, Ph.D. (one student participant)	Cell interaction and biological structure during limb development in man.
	Alonzo Atencio, Ph.D. (one student participant)	Effect of ACTH on liver RNA.
	John Omdahl, Ph.D. (one student participant)	Cellular and molecular mechanisms of vitamin and hormone action.
	Terrence Scullen, Ph.D. (no student participants)	Enzymatic synthesis of cholesterol and triglycerides.
	Beulah Woodfin, Ph.D. (one student participant)	Purification and characterization of fumarase.
	Sei Tokuda, Ph.D. Carl Cords, Ph.D. Ellen Goldberg, Ph.D. Leroy McLaren, Ph.D. Roger Radloff, Ph.D. Joseph Scaletti, Ph.D. (three student participants)	Study of the role of three different molecular forms of DNA in the replication of N-1 phage in *Micrococcus lysodeikticus*; efficacy of different methods for isolation of beta hemolytic Group A streptococci from clinical specimens; immunological enhancement of the sarcoma I tumor.
	William Woodside, Ph.D. (one student participant)	Effects of clofibrate on hepatic fatty acid metabolism.
	Barry Avner, Ph.D. (one student participant)	Basis for smooth muscle desensitization to beta-agonists.
	E. C. Palmer, Ph.D. (one student participant)	Pharmacological nature of adenylate cyclase in isolated brain capillaries.
	William Hadley, Ph.D. (one student participant)	Cadmium inhibition of microsomal drug metabolism in the albino rat.

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Program Director	Principal Investigators Number of Student Participants	Research Projects
University of New Mexico (Continued)	William Buss, Ph.D. (one student participant)	Regenerating thymus gland as a model for the study of agents affecting growth.
	Thomas Niemczyk, Ph.D. (one student participant)	Applications of high pressure liquid chromatography.
	Cary Morrow, Ph.D. (two student participants)	Antifertility drug synthesis.
	Robert Tapscott, Ph.D. (two student participants)	Stereoselective complexation reactions of transition metal ions with di-hydroxy di-carboxylates.
	William Coleman, Ph.D. (one student participant)	Platinum acid complexes; chemistry of chromium (III) amino acid complexes.
	William Litchman, Ph.D. (one student participant)	The carbon-13 spectra of substituted phenazines and related molecules.
	David Landau, Ph.D. (two student participants)	Light and electron microscope study of visual systems.
	Paul Kerkof, Ph.D. (two student participants)	Mechanism of TSH in tissue culture.
	Paul Kerkof, Ph.D. (one student participant)	Mechanism of action of stimulating hormone on morphology and metabolism of thyroid cells in tissue culture.
	Paul Silverman, Ph.D. (one student participant)	Evaluation of blood stage antigens in the immunoprophylaxis of malaria.
	Nathan Strahl, Ph.D. (one student participant)	Caffeine bio-availability: bio-availability of caffeine in coffees, teas and colas.

Program Director	Principal Investigators Number of Student Participants	Research Projects
Maxwell A. Bempong, Ph.D. Professor of Biology Norfolk State College 2401 Corprew Avenue Norfolk, Virginia 23504 (804) 623-8959	Maxwell A. Bempong, Ph.D. (five student participants) Theron L. Moore, Ph.D. (four student participants)	Inhibitors of DNA and RNA. Renin and renin-like substance in human tissues: purification and measurements of properties of renin-like enzymes from human brain tissue.
Richard Bennett, Jr., Ph.D. Professor of Chemistry North Carolina A & T State University 312 North Dudley Street Greensboro, North Carolina 27411 (919) 379-7601 (Continued on next page)	Richard Bennett, Ph.D. (nine student participants) William DeLauder, Ph.D. (seven student participants) Alfred Hill, Ph.D. (six student participants) Arthur Stevens, Ph.D. (six student participants)	Structural analysis of glycoproteins. Fluorescence of serum albumins. Systemic insecticides for control of oriental rat flea. Substitution reactions of metalloporphyrins; conversion of uric acid into soluble excretable form.

Program Director	Principal Investigators Number of Student Participants	Research Projects
North Carolina A & T State University (Continued)	James Williams, Ph.D. (six student participants)	Chronology of protein differentiation in the chick with special emphasis on hemoglobin moieties.
	Leo Williams, Ph.D. (five student participants)	An exploratory study of applications of electronic instrumentation in biomedical research.
	Walter Wright, Ph.D. (seven student participants)	Enzyme kinetic studies.
Walter H. Pattillo, Jr., Ph.D. Assistant Undergraduate Dean Professor of Biology North Carolina Central University Durham, North Carolina 27707 (919) 683-6407	Mary Townes, Ph.D. (seven student participants)	Contractile properties of the glycerinated stalks of *Vorticella*.
	Charles George, Ph.D. (seven student participants)	Flour beetle *(Tribolium castaneum)* microsporidiosis.
	Ezra Totton, Ph.D. (seven student participants)	The synthesis of physiologically active compounds: lactones, analgesics and alpha-diketones.
	John Myers, Ph.D. (eight student participants)	Nitrogen heterocyclics: utilization of 1,3-dipolar cycloaddition reactions in the synthesis of potentially active heterocyclic systems.
	K. H. Kim, Ph.D. (three student participants)	Clinical applications of computer interfaced multi-probe gamma rays spectrometer for dynamic function studies.

Program Director	Principal Investigators Number of Student Participants	Research Projects
Gary VanDenbos, Ph.D. Assistant, Professor of Chemistry Northeastern Oklahoma State University Tahlequah, Oklahoma 74464 (918) 456-5511 x2610	Gary VanDenbos, Ph.D. (four student participants) George Nolan, Ph.D. (four student participants) Everett Grigsby, Ph.D. (six student participants)	Regulation of cell replication by thyroid hormones. Removal of health hazardous gases from industrial wastes. Determination of the location, population density, seasonal movement, and ectoparasite load of three species of bats in the southwestern (Oklahoma) portion of the Ozark Plateau
Emerson Cooper, Ph.D. Professor of Chemistry Oakwood College Huntsville, Alabama 35806 (205) 837-1630 x280	David Richardson, Ph.D. (three student participants) Emerson A. Cooper, Ph.D. (three student participants	Synthesis of 2-beta, 16-alpha-dihydroxy-(-)-kaurane and 2-beta, 15-alpha-dihydroxy-(-)-kaur-16-ene. The synthesis of ninhydrin analogs for use in the identification of amino acids.

Program Director	Principal Investigators Number of Student Participants	Research Projects
Norman Savage, Ph.D. Associate Professor Department of Biology Pan American University Edinburg, Texas 78539 (512) 381-3161	Ernest J. Baca, Jr., Ph.D. Andres Estrada, M.S. (six student participants)	Studies on the mechanism of the bathochromic shift and wavelength regulation in visual pigments.
	Roy Cain, Ph.D. Gary Montgomery, Ph.D. (four student participants)	Psychological correlates of psychosomatic illness (tension headache, migraine headache, and allergy).
	Frank W. Judd, Ph.D. (four student participants)	Effects of various herbicides on survival, growth, reproduction, behavior, and metabolism of *Peromyscus leucopus*.
	Norman L. Savage, Ph.D. (four student participants)	Study of *Streptobacillus moniliformis* induced arthritis in rodents.

Program Director	Principal Investigators Number of Student Participants	Research Projects
Jewel E. Berry, Ph.D. Associate Professor of Biology Prairie View A & M University Prairie View, Texas 77445 (713) 857-3911/3912	Edward W. Martin, Ph.D. (three student participants) V. M. Doctor, Ph.D. (three student participants)	Mode of action of thyroxine, diiodothyronine, triiodothyronine, and cortisone upon developing systems in amphibians. Determining the active site of mammalian deoxyribonuclease I.
George W. Miskimen, Ph.D. Professor of Biology University of Puerto Rico Mayaguez, Puerto Rico 00708 (809) 832-4040 x3166	George Miskimen, Ph.D. Jaime Arbona-Fazzi, Ph.D. (four student participants) Tze-Chi Jao, Ph.D. Jaime Roman, M.S. (four student participants)	Electrophysiology of insects: sensory receptors, neural pathways, nervous and endocrine systems. Biochemical Raman spectroscopy: vibrational structures of nucleic acids, proteins and antibiotics; normal coordinate analyses of amides.

Program Director	Principal Investigators Number of Student Participants	Research Projects
George V. Hillyer, Ph.D. Program Director, SUBE P.O. Box AR - UPR Station University of Puerto Rico Rio Piedras Campus Faculty of Natural Sciences Rio Piedras, Puerto Rico 00931 (809) 765-9695	George V. Hillyer, Ph.D. (nine student participants)	Schistosomiasis and fascioliasis.
	Fernando Renaud, Ph.D. (eight student participants)	Chemistry of motility.
	Roberto Ramirez, Ph.D. (five student participants)	Biosynthesis of carotenoids.
	Gerald R. Stevenson, Ph.D. (four student participants)	Solvation studies of vitamin anions.
	Gerald I. Larson, Ph.D. (five student participants)	Hydroboration of silyl enol ethers: an approach to the snythesis of prostaglandins.
	George V. Hillyer, Ph.D. Gerald I Larson, Ph.D. (three student participants)	Thioxanthone derivatives as potential schistosomicides.
	James J. Keene, Ph.D. (six student participants)	Neural mechanisms of learning.
	Jose M. Garcia-Castro, M.D. (two student participants)	Clinical and comparative cytogenetics
	Waldemar Adam, Ph.D. (five student participants)	Prostaglandins: synthesis and mechanistic model studies.
	Manuel Martinez Maldonado, Ph.D. (three student participants)	Excretion of electrolytes and non electrolytes by the kidney.
	L. Kent Stitzer, Ph.D. (three student participants)	Control of hormone synthesis and its transport.

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Program Director	Principal Investigators Number of Student Participants	Research Projects
University of Puerto Rico (Continued)	Philip C. Specht, Ph.D. (two student participants)	Pharmacology of tissues from the lung.
	Susan Opava Stitzer, Ph.D. (three student participants)	Studies on renal physiology.
	Mariel Muir, Ph.D. James Muir, Ph.D. (two student participants)	Stereoselectivity in transition metal complexes: structure and mechanism.
	Rafael Arce, Ph.D. (three student participants)	Primary processes in radiation biology.
	Jose R. Ortiz, Ph.D. (four student participants)	Morphological and biochemical aspects of cell dedifferentiation during lens regeneration.

Program Director	Principal Investigators Number of Student Participants	Research Projects
C. Obi Emeh, Ph.D. Assistant Professor of Biology Division of Natural Sciences Savannah State College Post Office Box 20503 Savannah, Georgia 31404 (912) 356-2313	Chukwudi Obi Emeh, Ph.D. (five student participants)	Biosynthesis and biological activity of rubratoxins.
	Bernard L. Woodhouse, Ph.D. (four student participants)	Mechanism of the antihypertensive effects of beta adrenergic blocking drugs.
	Frissell Roy Hunter, Ph.D. (four student participants)	Drug effects on enzyme systems of *Euglena gracilis*.
Nirmalendu Datta-Gupta, Ph.D. Associate Professor of Chemistry South Carolina State College Box 1731 Orangeburg, South Carolina 20117 (803) 536-7157	Alfred Humbert, Ph.D. (two student participants)	Biological studies of synthetic porphyrins.
	N. Datta-Gupta, Ph.D. (seven student participants)	Rates of metallation of water insoluble porphyrins in non-aqueous solvents; binding studies of water soluble porphyrins with bovine serum albumin.
	N. Datta-Gupta, Ph.D. (three student participants)	Study of the binding of protein with synthetic water soluble porphyrins and metalloporphyrins.
	Roy Isabel, Ph.D. (two student participants)	Spectroscopic investigation of interactions between iron porphyrins and air pollutants, such as, sulfur dioxide, nitrosyl, nitroxyl, and ozone.

Program Director	Principal Investigators Number of Student Participants	Research Projects
Jack L. Robinson, Ph.D. Associate Professor of Chemistry Southeastern Oklahoma State University Durant, Oklahoma 74701 (405) 924-0121 x320	Gordon L. Eggleton, Ph.D. (five student participants)	Macrocyclic chelate compounds as models for biological systems.
	Jack L. Robinson, Ph.D. (five student participants)	Development of improved liquid chromatographic methods for the separation and analysis of compounds of current interest in environmental and biomedical sciences.
	R. John Taylor, Ph.D. (two student participants)	Effect of aquatic macrophytes on the quality of human drinking water impounded in artificial reservoirs.
	Frank Wade, Ph.D. (five student participants)	Regeneration of human drinking water at municipal treatment plants by using fish to scavenge tertiary treatment ponds: wastewater for the production of food and fiber.
	John R. Wright, Ph.D. (four student participants)	Lysosomes and progressive muscular dystrophy: biological nmr-membranes; penicillamine/copper interactions.

Program Director	Principal Investigators Number of Student Participants	Research Projects
Fred A. Christian, Ph.D. Professor of Biology Health Research Center Southern University Baton Rouge, Louisiana 70813 (504) 771-4243	James Bryant, Ph.D. (three student participants)	The effect of s-triazine herbicides on the phenotypic and genotypic expression of selected soil microorganisms.
	Frederick Christian, Ph.D. (four student participants)	Investigation into the epidemiology of allergic dermatitis caused by *Dermatophagoides* sp.
	Richard Echols, Ph.D. Robert Miller, Ph.D. (four student participants)	Investigation of the function of the amino group and thiol form of vitamin B_1 in a model system.
	Marva Thomas, M.S. (three student participants)	Exploratory studies of histidine ammonia lyase.
	E. V. Higginbotham, Ph.D. (four student participants)	Detection and characterization of a C3H/He mouse tumor virus.
	William Moore, Ph.D. (four student participants)	Denaturation studies of bovine serum albumin.

Program Director	Principal Investigators Number of Student Participants	Research Projects
Thomas J. Patterson, Ph.D. Chairman, Division of Science Southern University in New Orleans 6400 Press Drive New Orleans, Louisiana 70126 (504) 282-4401 x241	Stanley Boertje, Ph.D. (two student participants)	Plerocercoid larvae infections of the weakfish, *Cynoscion regalis*, in relationship to human sparganosis.
	Mohinder Ogra, Ph.D. (two student participants)	Biochemical and serological relationships between mycoplasmas of avian origin, human origin, and plant mycoplasma-like-organisms.
	Richard Majeste, Ph.D. (one student participant)	X-ray crystallographic studies on the structure and bonding of penicillin model complexes.
	Vibhaker Dave, Ph.D. (two student participants)	To identify the major pollutants and contaminants in water and air.

Program Director	Principal Investigators Number of Student Participants	Research Projects
Jarnail Singh, Ph.D. Associate Professor of Biology Stillman College P.O. Box 1430 Tuscaloosa, Alabama 35401 (205) 752-2548 x24, 37	Elbert Sparks, Ph.D. (three student participants) Jarnail Singh, Ph.D. (two student participants)	Pollution and the phytoplankton: effect of pollutants on phytoplankton. Effects of airborne chemicals on the genetic and physiological behavior as related to cancer in mice.
Arthur Bacon, Ph.D. Chairman Division of Natural Sciences Department of Biology Talladega College Talladega, Alabama 35160 (205) 362-5152	V. V. Murthy, Ph.D. (eight student participants) Arthur Bacon, Ph.D. (fourteen student participants)	Synthesis of trypsin active site inhibitors. The use of sea urchins as toxological tools.

Program Director	Principal Investigators Number of Student Participants	Research Projects
Henderson K. Wood, Ph.D. Professor and Head Department of Biological Sciences Tennessee State University 3500 Centennial Boulevard Nashville, Tennessee 37203 (615) 320-3322	Richard Hogg, Ph.D. Rother Johnson, Ph.D. (six student participants)	Location and description of the ultrastructure of thymic germinal centers in mice; the effects of amphetamines on the immune response; tissue changes following alcohol ingestion and cigarette smoking; the effects of mercury on mouse tissue; effects of sublethal doses of lead nitrate on the ultrastructure of germinal centers of the spleen and lymph nodes of mice.
	James Campbell, Ph.D. (five student participants)	Study of naturally occurring lotic polluted habitats and simulated microcosms within the laboratory.
	Henderson Wood, Ph.D. (three student participants)	The effects of drugs on cellular and subcellular levels.
John C. Perez, Ph.D. Associate Professor of Biology Texas A & I University Kingsville, Texas 78363 (512) 595-3803	John C. Perez, Ph.D. Harry Betterton, Ph.D. (five student participants)	Development of a radioimmunoassay that can be used to detect bacterial and viral antigens at the clinical level; purification of antiviral antibody by a modified affinity chromatograph procedure. Conjugation of low molecular venom components to carrier modes.
	James Gellaspy, Ph.D. (four student participants)	Venom study using cage reared *Polistes* wasps.
	Robert Brown, Ph.D. (two student participants)	Biomedical implication of antlerogensis in deer.

Program Director	Principal Investigators Number of Student Participants	Research Projects
John J. Session, Ph.D. Professor and Head Department of Biology Texas Southern University 3201 Wheeler Avenue Houston, Texas 77004 (713) 527-7005	John J. Session, Ph.D. (eight student participants)	Karyological and immunological studies of cell population changes in the laboratory mouse following subcutaneous injection of the polycyclic hydrocarbon 7, 12 dimethylbenz (Alpha) anthracene.
	John J. Session, Ph.D. (three student participants)	Quantification of immune capable cells at various times during allograft rejection in the laboratory mouse.
	Sunday O. Fadulu, Ph.D. (one student participant)	Amino acid analysis of *Histoplasma duboisii*.
	Sunday O. Fadulu, Ph.D. (one student participant)	Effect of endotoxin on muscular contraction in frog muscle.
	Sunday O. Fadulu, Ph.D. (one student participant)	Effect of endotoxin on neuromuscular activity in shrimps.
	Sunday O. Fadulu, Ph.D. (one student participant)	Effect of endotoxin on pulmonary circulatory hemodynamic substances in rabbits.
	Sunday O. Fadulu, Ph.D. (one student participant)	Chemical characterization of endotoxin of *Aspergillus flavus*.
	D. Ghosh, Ph.D. (two student participants)	Pteridines, redox reactions and the metabolism of tryptophan.
	Marion Hillar, Ph.D. (four student participants)	Glutamate dehydrogenase: studies upon regulation of electron transport.
	James Guilford, Ph.D. (two student participants)	Absorption, distribution and excretion of o, p'DDO.
	William B. Harrell, Ph.D. (five student participants)	Chemical and pharmacological study of mannich baes derived from indolizines.

Program Director	Principal Investigators Number of Student Participants	Research Projects
John R. Bristol, Ph.D. Associate Professor Department of Biological Sciences University of Texas at El Paso El Paso, Texas 79968 (915) 747-5844	John R. Bristol, Ph.D. (two student participants) Larry P. Jones, Ph.D. (two student participants) Eppie Real, Ph.D. (three student participants)	Physiology and biochemistry of pancreatic fluke *Brachylaime microti*. The toxic effects of heavy metal metabolites on fungi. Subclasses of chicken lymphocytes in cell mediated immunity.
G. S. Asokasrinivasan, Ph.D. Chairman Department of Biology Tougaloo College Tougaloo, Mississippi 39174 (601) 956-4941	G. S. Asokasrinivasan, Ph.D. (four student participants) Bam Mehrotra, Ph.D. (two student participants) John Heidama, Ph.D. (one student participant)	Sex pheromone in the beet armyworm. Biosynthesis of deoxyribose in plants and in *Pseudomonas stutzeri*. Studies on catalytic mechanisms of blood serum cholinesterase.

Program Director	Principal Investigators Number of Student Participants	Research Projects
James Henderson, Ph.D. Chairman Division of Natural Sciences Tuskegee Institute Tuskegee Institute, Alabama 36088 (205) 727-8124	Earl Dixon, Ph.D. (three student participants) Bernard Watson, Ph.D. (two student participants) Walter Sapp, Ph.D. (four student participants) O. P. Verma, Ph.D. (four student participants) Walter Sapp, Ph.D. (no student participants) Julian Thomas, Ph.D. (two student participants)	Kinetic properties of red cell hexokinases. Mechanisms of pathogenicity and immunity in listeriosis. Heterochromatic patterns in venereal tumors and normal canine cells. Circadian rhythm of the genital tract activity in domestic hens. Ultrastructure of lampbrush chromosomes in *Triturus viridescens*. Effects of amino acid starvation on acylation of branched chain tRNAs bacteria.

Program Director	Principal Investigators Number of Student Participants	Research Projects
Mary D. Healy, Ph.D. United Colleges of San Antonio Consortium Professor of Chemistry Incarnate Word College 4301 Broadway San Antonio, Texas 78209 (512) 828-1261 x231 Participating Institutions: Our Lady of the Lake University 411 Southwest 24th Street San Antonio, Texas 78285 (512) 434-6711 St. Mary's University One Camino Santa Maria San Antonio, Texas 78284 (512) 436-3011 Incarnate Word College 4301 Broadway San Antonio, Texas 78209 (512) 828-1261	Mary Daniel Healy, Ph.D. (nineteen student participants) Joseph Marie Armer, Ph.D. Maurice B. Clark, M.S. (six student participants) William J. Hamm, Ph.D. Paul H. Rodriguez, Ph.D. (four student participants) Catalina Fresquez, Ph.D. (two student participants)	Drug studies: magnesium metabolism. Enzyme levels and polar lipids in the blood of dogs infected with *Dirofilaria immitis*. Design and construction of a laser microirradiation system and its use in genetic studies using *Aedes aegypti*. DNA, RNA, and protein biosynthesis in polytene chromosomes.

Program Director	Principal Investigators Number of Student Participants	Research Projects
Robert F. Newkirk, Ph.D. Associate Professor of Biology Virginia State College Box G Petersburg, Virginia 23803 (804) 520-6131	Fred C. Divers, Ph.D. Robert F. Newkirk, Ph.D. (four student participants) Evelyn W. Jemison, M.S. (four student participants) Bernard R. Woodson, Ph.D. (four student participants) Dilip K. Sen, Ph.D. Marvin L. Powell, Ph.D. (four student participants)	Electrophysiology and neurochemistry of selected invertebrates. Cytogenetics: mitogenic and mutagenic responses of cultured lymphocytes. Effects of pesticides on algae. Host parasite relationship: trypanosomiasis in mice.
Wilveria B. Atkinson, Ph.D. Professor of Biology Winston-Salem State University Winston-Salem, North Carolina 27102 (919) 761-2122	Wilveria B. Atkinson, Ph.D. (two student participants) Nathaniel E. Hewitt, Jr., Ph.D. (two student participants) Alan H. Lipkin, Ph.D. (two student participants)	Identification of lung cells: surface antigens of type II epithelial cells (inbred mice). An electrophoretic evaluation of enzyme activity as a consequence of aging (inbred mice; *Drosophila*). Decarboxylative cyclization.

Program Director	Principal Investigators Number of Student Participants	Research Projects
Joyce H. Corrington, Ph.D. Director of Research in Science Xavier University of Louisiana 7325 Palmetto Street New Orleans, Louisiana 70125 (504) 486-7411 x311	Joyce Corrington, Ph.D. (two student participants)	Theoretical modeling of enzymatically catalyzed mechanisms.
	Mary Carl Malmstrom, Ph.D. (two student participants)	Elucidation of the structures of psychotropic drugs by means of single crystal x-ray diffraction.
	Portia Ashman, Ph.D. (three student participants)	Biochemical lesions in *Microtus montanus* chronically infected with *Trypanosoma brucei*.
	Grace Mary Flickinger, Ph.D. (two student participants)	A dermatoglyphic analysis of the American Black population.
	Patrick A. Miederhoff, Ph.D. (two student participants)	The effect of drug abuse education programs on participants attitudes.
Amedeo D'Adamo, Ph.D. Associate Professor of Biology Division of Natural Sciences and Mathematics York College of the City University of New York Jamaica, New York 11451 (212) 969-4378	Amedeo D'Adamo, Ph.D. (three student participants)	Neurochemistry of N-acetyl-L-aspartic acid.

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